MANUFACTURERS AND DISTRIBUTORS OF:

CPR Bio-Barrier Face Shields
Universal Pocket Ventilators
Rescue Breather® CPR Protective Barriers
Demand Valve Resuscitators
CAREvent® Range of Automatic Transport Ventilators
Oxygen Demand & BVM Oxygen Supply Refill Valves
SQ® Unibody Regulators
EasyGrip® Bag-Valve-Mask Resuscitators
Burn Relief® Burn Kits and Dressings
Genesis® II IDLH Rescue Resuscitators
Equinox® 50% Nitrous Oxide/50% Oxygen
Administration Systems

Your Representative is:

O-TWO MEDICAL TECHNOLOGIES INC.
"Innovation in Resuscitation"

CE 0120

ISO 13485

7575 Kimbel Street
Mississauga, Ontario
Canada L5S 1C8

Tel: (905) 677-9410 Fax: (905) 677-2035
Website: www.otwo.com E-Mail: resuscitation@otwo.com

For your nearest Authorized O-Two Medical Tech. Distributor
In North America Toll Free 1-800-387-3405

O-Two MEDICAL TECHNOLOGIES INC

Equinox® II

NITROUS OXIDE / OXYGEN ADMINISTRATION EQUIPMENT 01EQ7000E

USER MANUAL

Made in Canada by
O-Two Medical Technologies Inc.
Part Number: 17MP1342 Rev C Oct. 2008

5. O-TWO MEDICAL

Equinox® *II* DEMAND VALVE REPLACEMENT PARTS

01BM2302-1	Patient Valve Swivel Housing Assembly
17MP1528	Silicone Diaphragm
02FM4999	Universal Oronasal Resuscitation Mask
01EQ7001E	*Equinox*® *II* Demand Valve with 7’ Hose
01EQ7002	*Equinox*® *II* Regulator
17MP7000	Scavenger/Adapter
01EQ7006	*Equinox*® *II* Demand Valve Bleed Pin with Chain
17MP1329	*Equinox*® *II* 7’ Replacement Hose with Fittings

CONTACT YOUR NEAREST O-TWO MEDICAL AUTHORIZED DISTRIBUTOR FOR A COMPLETE CATALOGUE ON ALL O-TWO MEDICAL MANUFACTURED PRODUCTS.

TABLE OF CONTENTS

1. INTRODUCTION

1.1 Equinox® II DEMAND VALVE

O-Two Medical Technologies Equinox® II Demand Valve provides trained individuals with a safe and effective means of providing analgesia (pain relief) by inhalation.

O-Two Medical Equinox® II Demand Valves are lightweight, portable, and extremely durable. Designed for the demands of the pre-hospital and in-hospital environment, they can be operated anywhere 50% Nitrous Oxide/50% Oxygen mixture cylinders are available.

Note: Only those individuals trained in the administration of Nitrous Oxide/Oxygen mixtures should use this equipment. Thoroughly review the instruction manual before use.

1.2 WARRANTY

WARRANTY

O-Two equipment is manufactured from the finest quality materials. Each individual part is subject to strict quality control tests to ensure exceptionally high standards. The manufacturer warrants to the purchaser of DEMAND VALVE (RESUSCITATOR) that its component parts are free from defects in material and workmanship for a period of two years from the date of purchase. The manufacturer will replace and /or repair all parts of the resuscitator at its option for two years from the date of purchase at no cost to the purchaser, upon the notification of the defects, in writing by the purchaser. All shipping costs shall be borne by the purchaser. The manufacturer shall be liable under this warranty only if the resuscitator and its parts have not been used and serviced in the normal manner described in the instruction manual. There are no other expressed or implied warranties. This warranty gives no specific legal rights. You may also have other rights which may vary according to local regulations.

4.4. CLEANING AND STERILIZATION

Pressure Regulators

Simply wipe down regulator parts after use with a commercial disinfectant/antimicrobial agent. Do not immerse regulator in fluid or subject to autoclaving. If further sterilization is required due to infectious disease, a cold Ethylene Oxide gas sterilizing cycle may be used. **Oil, grease or hydrocarbon-based sealants must be used on this equipment.**

4.3 TO REPLACE A DEPLETED CYLINDER

1. Ensure that the cylinder to be changed is turned Off (clockwise), and any remaining gas bled out of the regulator.
2. Loosen the T-bar on the regulator yoke by turning counter-clockwise.
3. Lift the regulator off the cylinder post valve.
4. Remove the used washer located in the yoke adapter and replace with a new one (usually supplied with each freshly filled cylinder).
5. Ensure that the new cylinder is labeled 50% Nitrous Oxide/50% Oxygen (Entonox).
6. "Crack" the new cylinder by quickly turning the cylinder on and then off. This ensures that the post valve is clean of any foreign material.
7. Place the regulator on the full cylinder's post valve, ensuring that the guiding pin and inlet port on the regulator, line up with the corresponding holes on the cylinder post and that the cylinder washer is in place.

   NOTE: Small medical gas cylinders are protected from inadvertent interchange by a Pin Index Safety System. Guiding pins will only allow Entonox regulators to be used on Entonox cylinders. Should your regulator not fit a cylinder which supposedly contains Entonox, **do not lubricate, force or remove the guiding pin to make it fit. Instead, return the cylinder to the supplier immediately.**
8. Tighten the T-bar until very snug.
9. Slowly turn the cylinder ON (counter-clockwise at least one full turn). If a leak around the cylinder post is noted, first further tighten the yoke T-bar. If this does not correct the leak, washer replacement may be required. DO NOT PLACE ANY REGULATOR INTO SERVICE WITH A SIGNIFICANT LEAK, AS THIS MAY SEVERELY DETRACT FROM ITS FUNCTION. RETURN THE UNIT IMMEDIATELY TO THE MANUFACTURER OR AN AUTHORIZED O-TWO MEDICAL DEALER.
10. Confirm that the regulator gauge reads FULL.
11. Check for proper function of all components.
12. Ensure that the cylinder is turned OFF after each use, bleed off the residual gas in the system using the *Equinox® II* Demand Valve Bleed Pin and return equipment to storage neatly.

1.3 SAFETY PRECAUTIONS

The O-Two Medical *Equinox® II* Demand Valve is intended for use by suitably trained and qualified personnel.

The following precautions should always be observed:

1. **CAUTION:** FEDERAL LAW RESTRICTS THIS DEVICE TO SALE BY OR ON THE ORDER OF A PHYSICIAN.
2. WHEN THE UNIT IS IN USE, DO NOT SMOKE OR USE NEAR OPEN FLAME EITHER DURING USE OR WHEN CHANGING THE CYLINDER.
3. WHEN NOT IN USE, ALWAYS TURN OFF THE CYLINDER.
4. NEVER ALLOW OIL OR GREASE TO COME INTO CONTACT WITH ANY PART OF THE CYLINDER, REGULATOR OR DEMAND VALVE.
5. DO NOT DISASSEMBLE ANY PART OF THE DEMAND VALVE EXCEPT WHERE DESCRIBED IN THIS MANUAL AS ANY UNAUTHORIZED DISASSEMBLY WILL INVALIDATE THE WARRANTY.
6. AFTER USE, ALWAYS ENSURE THAT ALL COMPONENTS ARE CLEANED IN ACCORDANCE WITH THE INSTRUCTIONS PROVIDED IN THIS MANUAL.
7. ALWAYS USE THE CHECK LIST TO ENSURE THAT ALL COMPONENTS ARE REASSEMBLED CORRECTLY AND READY FOR USE.
8. AFTER USE, ALWAYS ENSURE THAT A FULL GAS CYLINDER IS ATTACHED BEFORE RETURNING THE UNIT TO ITS NORMAL STORAGE POSITION.

1.4 PERFORMANCE SPECIFICATION

Demand Flow Rate ..……...……..… >160 LPM

Demand FlowTriggering Pressure …....100 LPM @< -5 cmH_2O

Input Pressure…….…….…… 50 PSI +/-10%

Operating/Storage Temp. ..……...…..……. -35^{0}F to 125^{0}F

-37^{0}C to 51^{0}C

Input Connection……...…..…..…… 5/8” DISS

Patient Connector…….……..... 15/22 mm

Weight……...…. 8 oz

226.8 grams

4. Equinox® II REGULATOR

4.1 SPECIFICATION

Pressure Regulator

Classification: Diaphragm-type with upstream valving mechanism
Dimensions: 137 mm X 63.5 mm X 177 mm
Weight: 960 gm
Maximum Rated Inlet Pressure: 2200 psig (15169 kPa)
Output Pressure at Zero Flow: 50 psig (345 kPa) +/- 10%
Contents Gauge Range: 0-4000 pisg (0-26000 kPa)
Inlet Fitting: CGA 965 D.I.S.S. yoke
Outlet Fitting: 5/8” – Male D.I.S.S.

4.2 MAINTENANCE

Pressure regulators and their auxiliary components should be checked at least every six months, and more frequently in high use applications. O-Two Medical equipment is not designed for field disassembly and service. Even pressure gauges on some regulator models are specifically matched to each individual regulator’s functional characteristics, and thus cannot simply be replaced.

NOTE: Outlet fittings and components must be moved from one regulator port to another. The full 2000 psi pressure of the gas cylinder may be transmitted directly to inappropriate equipment with disastrous consequences.

Any units requiring modifications, or determined as malfunctioning, should be returned to the manufacturer or an authorized O-Two Medical Dealer. Unauthorized repairs will nullify the product warranty.

3.2 CLEANING THE *Equinox*® *II* DEMAND VALVE

Routine cleaning of the O-Two Medical *Equinox*® *II* Demand Valve should be undertaken to maintain the equipment in a clean condition.

Sterilize face mask, patient valve and diaphragm which are used for equipment coming into contact with partients using most common disinfecting solutions such as CIDEX or 10% bleach solution. Rinse thoroughly with water after sterilization.

All other components should be cleaned with a mild soap solution.

WARNING:

Do not attempt to clean and sterilize any components that are designated as disposable as immersion of these items into a sterilizing solution can cause degeneration of the materials.

CLEANING PROCEDURE

The *Equinox*® *II* Demand Valve must be thoroughly cleaned after each patient use.

1. Ensure that the cylinder is turned off (completely clockwise) and any remaining gas bled out of the regulator.
2. Remove the facemask from the *Equinox*® *II* Demand Valve, and then disconnect the demand valve from the regulator. This is accomplished by counter-clockwise turning of the connection nut at the regulator end of the hose. A wrench may be required.
3. Unscrew patient valve from the unit body being careful to ensure that the diaphragm is retained.
4. Wash all components thoroughly in a mild soap solution and disinfect as required.
5. The handpiece can be wiped over with a soft cloth and mild soap solution.
6. Dry all components thoroughly.
7. Re-assemble and check performance.

2. OPERATING PROCEDURE

2.1 DEMAND BREATHING

The O-Two Medical *Equinox*® *II* Demand Valve is a device powered by the 50 psi output gas from the pressure regulator. Its function is to provide gas to the patient at a safe delivery pressure and adequate flow rate upon demand.

An inspiratory effort by the patient will open the demand valve and oxygen/nitrous oxide will flow to the patient at a rate and volume in line with their inspiratory effort.

2.2 OPERATING INSTRUCTIONS

1. Ensure that the *Equinox*® *II* Demand Valve/Regulator connection is snug.
2. Turn the cylinder handwheel counter clockwise to the ON position (at least one full turn).
3. Ensure that the regulator contents gauge reads greater than 500 psi. If not, replace with a full cylinder.
4. Attach the Universal facemask to the *Equinox*® *II* Demand Valve outlet.
5. Instruct the patient in its operation. Most protocols insist that the gas be self-administered by the patient to prevent inadvertent excessive administration by an attendant.
6. To trigger the demand valve and obtain an adequate flow of gas, it is necessary to make a good mask to face seal. Simply place the mask on the patient's face, covering both the nose and mouth. Instruct the patient to hold the mask on his/her face with a light pressure and breath normally. The sound of gas flowing should be heard with each inspiration. If not, adjust the patient's hold on the mask for a better seal and ask the patient to breath more deeply.
7. Continue administration as per local management protocol.

8. Ensure that the cylinder is turned OFF after each use and remaining gas released from the system by simply loosening the regulator/demand valve connection until gas flow ceases. Always retighten the connection after bleeding the surplus pressure. Alternatively place the bleed pin attached to the regulator into the centre on top of the *Equinox® II* Demand Valve and depress until gas floe ceases.

2.3 SCAVENGING OF WASTE NITROUS OXIDE/OXYGEN MIXTURE USING THE SCAVENGER ADAPTER

The dual purpose, O-Two medical Scavenger/PEEP Adapter is designed to replace the *Equinox® II* Scavenger Mask with a simpler, more user friendly method of scavenging exhaled air from the patient during inhalation analgesia.

The Scavenger Adapter provides a secure fit by simply pushing the Scavenger adapter over the 15/22 mm Patient Valve Swivel Housing on the *Equinox® II* Demand Valve. The 19 mm exhalation port meets the requirements of the International Standards for Conical Connectors for Low Pressure Medical Gas Systems and will allow the attachment of corrugated tubing so that the patient's exhaled breath can be scavenged from the exhalation valve to the exhaust method chosen by the facility using the device.

3. SERVICING

3.1 ROUTINE MAINTENANCE

WARNING:

The O-Two Medical *Equinox® II* Demand Valve is designed to provide years of reliable service in all emergency situations. Failure to follow the maintenance and inspection routines properly could result in incorrect operation of the demand valve.

To ensure proper operation of the demand valve regular inspection and checking of the demand valve and accessories for correct function should be undertaken by a responsible member of staff on a regular basis.

This check is to ensure that all of the accessories and demand valve components are present, the gas mixture cylinder is full and that the demand valve is in working order.

MAINTENANCE

Resuscitation parameters should be checked at least every six months, and more frequently in high use applications. Units with test pressures outside of the ranges listed in the product specifications should not be used. O-Two Medical products are not designed for field disassembly or service outside that indicated in this manual. Any malfunctioning units should be returned to the manufacturer or an Authorized O-Two Medical Technologies Dealer. Unauthorized repairs will nullify the product warranty.